


**CUI INC**
**date** 10/2010

**page** 1 of 3

**SERIES:** ACZ11

**DESCRIPTION:** mechanical incremental encoder

## ELECTRICAL SPECIFICATIONS

| parameter               | conditions/description                                      |
|-------------------------|-------------------------------------------------------------|
| output waveform         | square wave                                                 |
| output signals          | A, B phase                                                  |
| current consumption     | 10 mA                                                       |
| output phase difference | T1, T2, T3, T4 $\geq$ 3.5 ms @ 60 rpm (see output waveform) |
| supply voltage          | 5 V dc max.                                                 |
| output resolution       | 12, 15, 20, 30 ppr                                          |
| switch rating           | 12 V dc, 50 mA (ACZ11BRXE models only)                      |
| insulation resistance   | 300 V dc, 100 M $\Omega$                                    |
| withstand voltage       | 300 V ac                                                    |

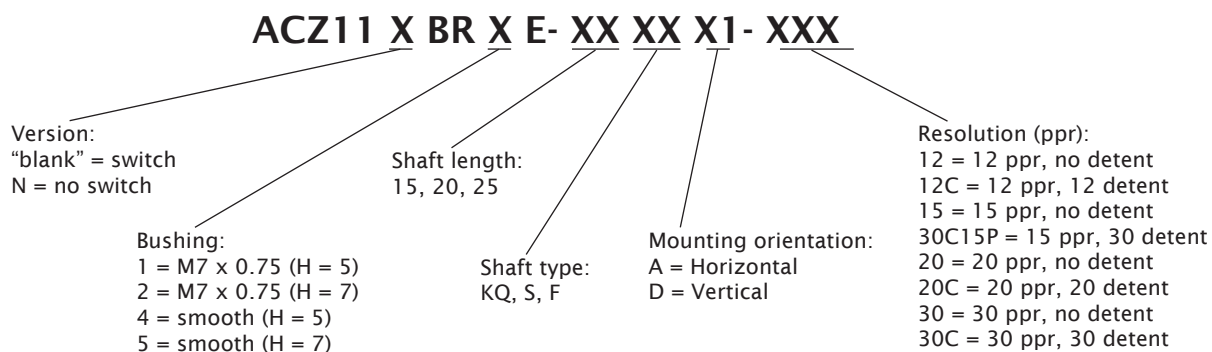
## MECHANICAL SPECIFICATIONS

| parameter                     | conditions/description  | min | nom | max    | units  |
|-------------------------------|-------------------------|-----|-----|--------|--------|
| shaft load                    | axial                   |     |     | 8      | kgf    |
| rotational torque             | with detent click       | 60  | 140 | 220    | gf·cm  |
|                               | without detent click    | 60  | 80  | 100    | gf·cm  |
| push switch operational force | (ACZ11BRXE models only) | 300 |     | 900    | gf·cm  |
| push switch life              | (ACZ11BRXE models only) |     |     | 50,000 | cycles |
| rotational life               |                         |     |     | 30,000 | cycles |

## ENVIRONMENTAL SPECIFICATIONS

| parameter             | conditions/description          | min | nom | max | units |
|-----------------------|---------------------------------|-----|-----|-----|-------|
| operating temperature |                                 | -10 |     | 65  | °C    |
| storage temperature   |                                 | -40 |     | 75  | °C    |
| humidity              |                                 | 85  |     |     | % RH  |
| vibration             | 0.75 mm max. travel for 2 hours | 10  |     | 55  | Hz    |

## PART NUMBER KEY

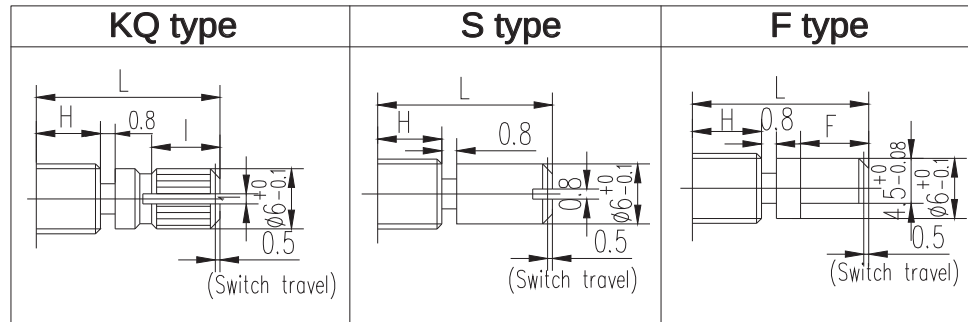




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## SHAFT OPTIONS



switch travel for ACZ11BRXE only

## BUSHING

|   | Condition | H |
|---|-----------|---|
| 1 | M7-P0.75  | 5 |
| 2 | M7-P0.75  | 7 |
| 4 | smooth    | 5 |
| 5 | smooth    | 7 |

|     |      |      |      |
|-----|------|------|------|
| H=5 | 15KQ | 20KQ | 25KQ |
| L   | 15   | 20   | 25   |
| I   | 7    | 10   | 12   |

|     |      |      |      |
|-----|------|------|------|
| H=7 | 15KQ | 20KQ | 25KQ |
| L   | 15   | 20   | 25   |
| I   | 5    | 8.5  | 10   |

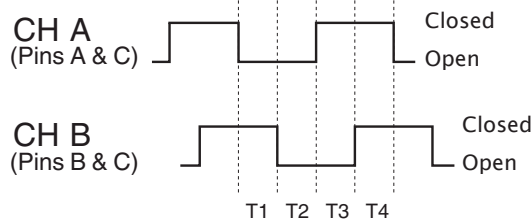
|     |     |     |     |
|-----|-----|-----|-----|
| H=5 | 15S | 20S | 25S |
| L   | 15  | 20  | 25  |

|     |     |     |     |
|-----|-----|-----|-----|
| H=7 | 15S | 20S | 25S |
| L   | 15  | 20  | 25  |

|     |     |     |     |
|-----|-----|-----|-----|
| H=5 | 15F | 20F | 25F |
| L   | 15  | 20  | 25  |
| F   | 8   | 12  | 12  |

|     |     |     |     |
|-----|-----|-----|-----|
| H=7 | 15F | 20F | 25F |
| L   | 15  | 20  | 25  |
| F   | 8   | 12  | 12  |

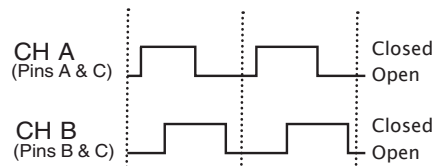
## OUTPUT WAVEFORM



CW direction (@ 60 rpm)

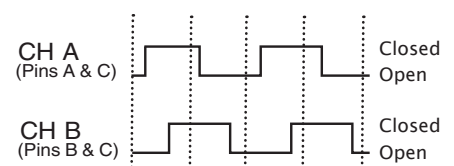
## DETENT POSITIONS

## Model 12C &amp; 20C



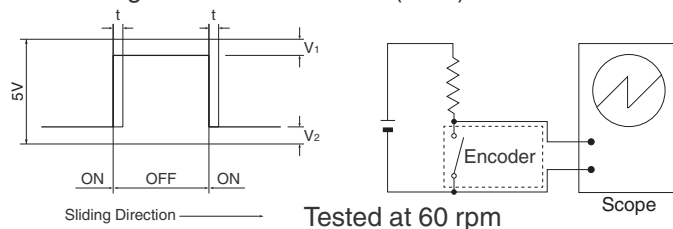
CW direction →

## Model 15P30C



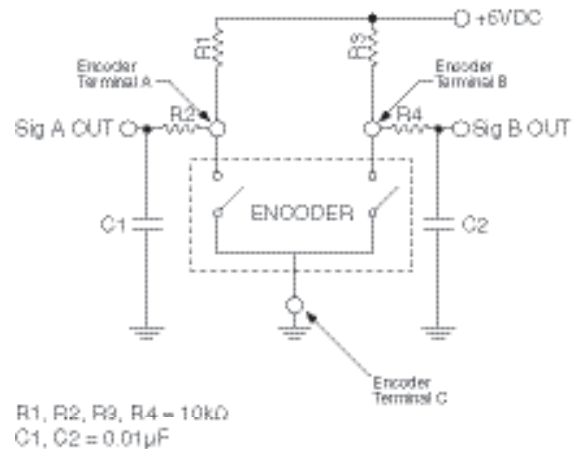
CW direction →

## SLIDING NOISE

t = Masking time to avoid chatter (5mS)  $V_1 = V_2 = 1V$  max.

Tested at 60 rpm

## SUGGESTED FILTER

R1, R2, R3, R4 = 10kΩ  
C1, C2 = 0.01μF



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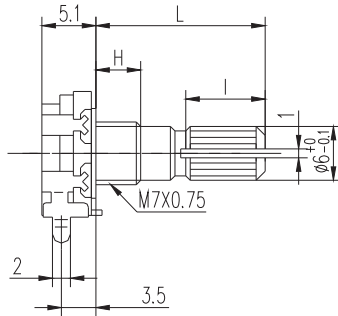
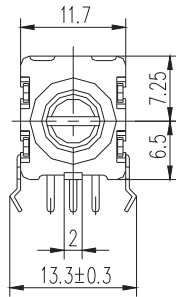
page 3 of 3

SERIES: ACZ11

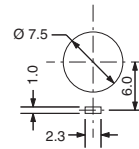
DESCRIPTION: mechanical incremental encoder

## MECHANICAL DRAWING (horizontal)

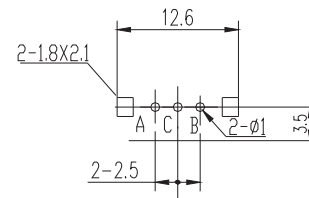
ACZ11NBRXE



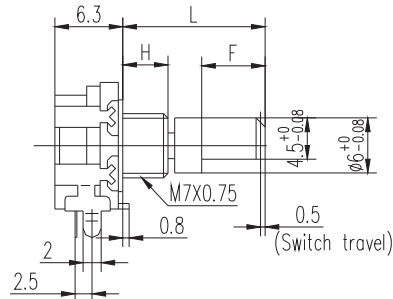
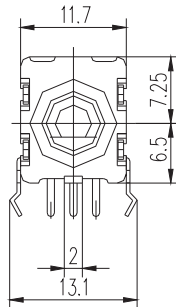
PANEL CUT-OUT



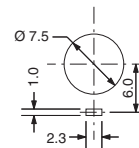
PCB LAYOUT



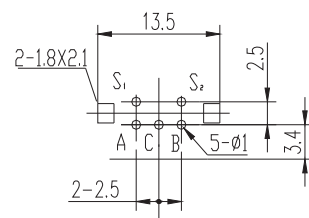
ACZ11BRXE



PANEL CUT-OUT

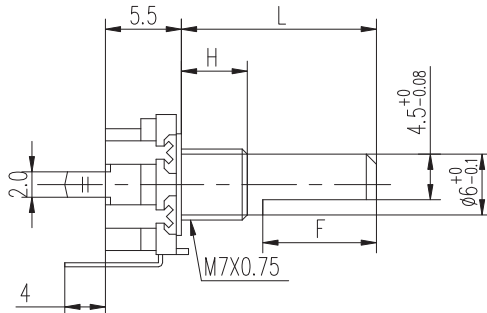
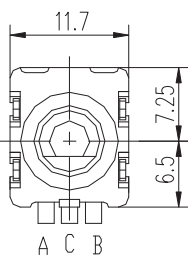


PCB LAYOUT

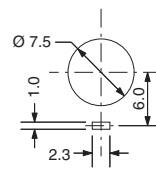


## MECHANICAL DRAWING (vertical)

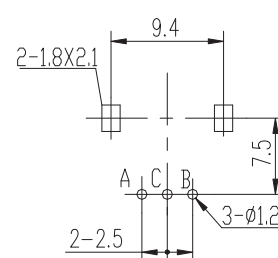
ACZ11NBRXE



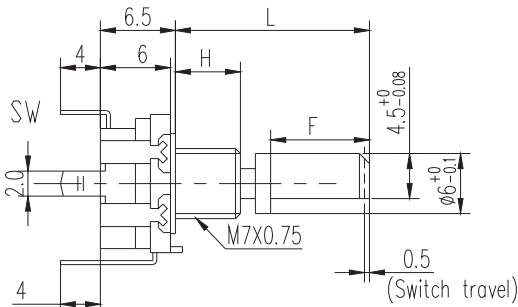
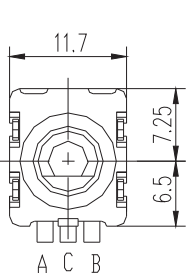
PANEL CUT-OUT



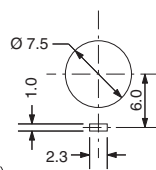
PCB LAYOUT



ACZ11BRXE



PANEL CUT-OUT



PCB LAYOUT

